

CLEAN VERSION OF CLAIM SECTION

1. In a locale with a plurality of probes interconnected to a computing device, a plurality of mobile devices, and means to enter message to and to retrieve information on said mobile devices, a method of position tracking and communication comprising the steps of:
  - (a) placing said probes at key locations in said locale;
  - (b) modeling said locale with site-specific information using a network of states and transitions with probabilities;
  - (c) deploying said mobile devices for position tracking and communication;
  - (d) encoding each mobile device with an identifier;
  - (e) sending out beacons by said probes periodically;
  - (f) responding by said mobile device upon receiving said beacon from said probes;
  - (g) gathering the whereabouts of said mobile devices to feed to said computing device;
  - (h) calculating the most probable location of said mobile device using said whereabouts of said mobile device and said network of states and transitions with probabilities;
  - (i) notifying said mobile device with message; and
  - (j) updating possible change to said site specific information.
2. In a method of position tracking and communication of claim 1, said deploying said mobile devices comprising the step of;
  - (a) calculating the desired life span of each of said mobile devices;
  - (b) equipping said mobile device with limited battery power sources corresponding to said desired life span; and
  - (c) attaching said mobile device to person or object to be tracked.
3. In a method of position tracking and communication of claim 1, said encoding each mobile device with an identifier comprising the step of;
  - (a) calculating the necessary number of mobile devices in the locale;
  - (b) separating said identifier into two parts, one common part for uniqueness within said locale and one group part for supplementary use;
  - (c) communicating with said probes with the said common part;
  - (d) sending said group part of said identifier upon request from said probes, and

- (e) reusing said identifier when tag with said identifier has run out of batter.
4. In a method of position tracking and communication of claim 1, said calculating the most probable location of said mobile device comprising the step of;
- (a) retrieving the current location of said mobile device;
  - (b) retrieving the past history of said mobile device; and
  - (c) mapping said current location and said history of said mobile device with site specific information using said network of states and transitions with probabilities.
5. In a method of position tracking and communication of claim 1, said notifying said mobile device with message comprising the step of;
- (a) calculating said most likely location of said mobile device;
  - (b) calculating the most appropriate messaging device nearby; and
  - (c) sending said message to said messaging device.
6. In a method of position tracking and communication of claim 1, said updating possible change to said site specific information comprising the step of;
- (a) retrieving current location of said mobile device;
  - (b) calculating for discrepancies with said site specific information;
  - (c) retrieving history data on similar occurrence(s);
  - (d) alerting system operator of said discrepancies; and
  - (e) changing said network of states and transitions with probabilities.
7. In a locale with a plurality of probes interconnected to a computing device, a plurality of mobile devices, and means to enter message to and to retrieve information on said mobile devices, an apparatus for position tracking and communication comprising:
- (a) configuring means to place said probes at key locations in said locale;
  - (b) modeling means to model said locale with site specific information using a network of states and transitions with probabilities;
  - (c) installing means to deploy said mobile devices for position tracking and communication;
  - (d) installing means to encode each of said mobile devices with an identifier;
  - (e) probing means to send out beacons by said probes periodically;
  - (f) responding means by said mobile device upon receiving said beacon from said probes;

- (g) collecting means to gather the whereabouts of said mobile devices to feed to the central data collection device;
- (h) determining means to calculate the most likely location of said mobile device;
- (i) messaging means to notify said mobile device with message; and
- (j) updating means to calculate possible change to said site specific information.